WHAT IS CLAIMED IS:

1. A miniature fiberoptic filter comprising

a first optical fiber;

a first multimode optical fiber segment attached to an end of said first optical fiber, said first multimode optical fiber segment having a step index of refraction and axially aligned with said first optical fiber, said first multimode optical fiber segment having a first length;

a second multimode optical fiber segment attached to said first multimode optical fiber segment, said second multimode optical fiber segment having a graded index of refraction core and axially aligned with said first multimode optical fiber segment, said second multimode optical fiber segment having a second length, said first and second lengths selected to define a collimation and focusing function for light from and to said first optical fiber;

a plurality of dielectric coatings on an end of said second multimode optical fiber segment opposite said first multimode optical fiber segment, said plurality of dielectric coatings forming a wavelength-dependent optical filter;

a second optical fiber;

a third multimode optical fiber segment attached to an end of said second optical fiber, said third multimode optical fiber segment having a step index of refraction and axially aligned with said second optical fiber, said third multimode optical fiber segment having a third length; and

a fourth multimode optical fiber segment attached to said third multimode optical fiber segment, said fourth multimode optical fiber segment having a graded index of refraction core and axially aligned with said third multimode optical fiber segment, said fourth multimode optical fiber segment having a fourth length, said third and fourth lengths selected to define a collimation and focusing function for light from and to said second optical fiber, said fourth multimode optical fiber segment having an end opposite third multimode optical fiber segment and facing said end of said second multimode optical fiber segment;

said first optical fiber, said first multimode optical fiber segment, said second multimode optical fiber segment, said plurality of dielectric coatings, said second optical fiber, said third multimode optical fiber segment, said fourth multimode optical fiber segment arranged

and oriented with each other so light from said core of said first optical fiber passing through said plurality of dielectric coatings enters said core of said second optical fiber.

2. The miniature fiberoptic filter of claim 1 comprising

a cylindrical package holding an end section of said first optical fiber, said first multimode optical fiber segment, said second multimode optical fiber segment, an end section of said second optical fiber, said third multimode optical fiber segment, said fourth multimode optical fiber segment, said cylindrical package having an outside diameter less than 0.4mm.

3. The miniature fiberoptic filter of claim 2 wherein said cylindrical package comprises metal sleeves engaging portions of said end sections of said first and second optical fibers, each portion having a metal coating and closely engaging a metal sleeve.

4. The miniature fiberoptic filter of claim 3 wherein said cylindrical package has a circular cross-section.

5. The miniature fiberoptic filter of claim 3 wherein each metal coating is fixed to its corresponding metal sleeve.

6. The miniature fiberoptic filter of claim 5 wherein each metal coating is fixed to its corresponding metal sleeve by a laser solder.

7. The miniature fiberoptic filter of claim 5 wherein each metal coating is fixed to its corresponding metal sleeve by a laser weld.

8. The miniature fiberoptic filter of claim 1 wherein said plurality of dielectric coatings form a low-pass filter.

9. The miniature fiberoptic filter of claim 1 wherein said plurality of dielectric coatings form a high-pass filter.

10. The miniature fiberoptic filter of claim 1 wherein said plurality of dielectric coatings form a bandpass filter.

11. The miniature fiberoptic filter of claim 1 wherein said end of said second multimode optical fiber segment is angled from a plane perpendicular to a longitudinal axis of said second multimode optical fiber segment.

12. The miniature fiberoptic filter of claim 11 comprising said end of said fourth multimode optical fiber segment is reciprocally angled with respect to said end of said second multimode optical fiber segment.

13. A method of manufacturing a miniature fiberoptic filter comprising

fixing first and second multimode fiber segments to a first optical fiber end section, said first multimode fiber segment between said first optical fiber end section and said second multimode fiber segment, said first multimode fiber segment having a step index of refraction and said second multimode fiber segment having a graded index of refraction core;

selecting lengths of said first and second first and second multimode fiber segments to define a collimation and focusing function for light from and to said first optical fiber end section;

depositing a plurality of dielectric layers upon an end surface of said second multimode fiber segment opposite said first multimode fiber segment, said plurality of dielectric layers defining a wavelength- dependent filtering function;

fixing third and fourth multimode fiber segments to a second optical fiber end section, said third multimode fiber segment between said second optical fiber end section and said fourth multimode fiber segment, said third multimode fiber segment having a step index of refraction and said fourth multimode fiber segment having a graded index of refraction core;

selecting lengths of said third and fourth multimode fiber segments to define a collimation and focusing function for light from and to said second optical fiber end section; and

arranging and orienting said first optical fiber end section and fixed first and second multimode fiber segments with said second optical fiber end section and fixed third and fourth multimode fiber segments so light from a core of said first optical fiber end section passing through said plurality of dielectric coatings enters a core of said second optical fiber end section.

14. The method of claim 13 further comprising

angle-polishing said end surface of said second multimode fiber segment and an end surface of said fourth multimode fiber segment opposite said third multimode fiber segment so that said end surfaces are angled from a perpendicular to a longitudinal axis of said second and fourth multimode fibers segments respectively.

15. The method of claim 14 wherein said angle-polishing step comprises simultaneously angle-polishing end surfaces of a plurality of multimode fiber segments in a fixture having an angle-polishing guide surface at an angle to a perpendicular plane to said plurality of multimode fiber segments in said fixture.

16. The method of claim 15 wherein said angle-polishing step comprises simultaneously angle-polishing end surfaces of at least _____ multimode fiber segments.

17. The method of claim 13 wherein said first and third multimode fiber segments comprise step index multimode fiber segments, and wherein said selecting steps comprise selecting lengths of said first and third multimode segments approximately 610μm.

18. The method of claim 13 wherein said second and fourth multimode fiber segments comprise graded index fiber segment, and wherein said selecting steps comprise selecting lengths of said second and fourth multimode segments approximately 135μm.

19. The method of claim 13 further comprising

forming metal coating over predetermined portions of said first and second optical fiber end sections; and

fitting a metal sleeve over said first optical fiber end section with said fixed first and second multimode fiber segments and said second optical fiber end section with said fixed third and fourth multimode fiber segments; and

fixing said metal sleeve to said metal coatings.

20. The method of claim 19 wherein said fitting step comprises selecting a metal sleeve having an outside diameter less than 0.4mm.